

# UAW 2019

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**UAW**

advancing geodesy

**unified  
analysis  
workshop**

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# UAW 2019 Participants

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**Total: 69**

# Sessions

- Opening Session
  - Welcome
- DORIS Systematic Errors and Biases
- GNSS Systematic Errors and Biases
- VLBI Systematic Errors and Biases
- SLR Systematic Errors and Biases
- Gravity Models for Precise Orbit Determination
- Global Space Geodesy Infrastructure
- Standards, Conventions, and Formats
- Digital Object Identifiers for Geodetic Data Sets
- Global Unified Height System
- Reference Systems and Frames
- Site Survey and Co-location
- Closing Session
  - Summary of sessions and discussion of recommendations

# DORIS Systematic Errors & Biases

- Recommendations

- South Atlantic Anomaly

- Determine optimal strategy for reprocessing by holding test campaigns
      - During 2007 for Jason-1 and SPOT-5
      - During 2017-2018 for Jason-2 and Jason-3

- Scale

- Use corrected values of antenna phase center offset (PCO)
    - Downweight low-elevation data

- Non-conservative force modeling

- Mitigate 117-day signal in DORIS data and products by
      - Using quaternions for Jason satellites
      - Adjusting 1Cr/arc
    - Use more recent albedo and infrared models

- Notes

- Imperfect thermosphere models remain a limiting factor in determining orbits of DORIS satellites at those altitudes

# GNSS Systematic Errors & Biases

- Recommendations
  - Troposphere products
    - Provide results, especially from reprocessing, because of their importance

# VLBI Systematic Errors & Biases

- Recommendations
  - Gravitational deformation of antennas
    - All VLBI antennas should have surveys done in order to determine the effect of gravitational deformation

# Global Space Geodesy Infrastructure

- Recommendations

- Inter-Service communication

- Establish regular communication channels among the different techniques
      - To ensure that issues impacting each other are discussed in a timely manner

- Sustaining space geodesy enterprise

- Great opportunity to participate in analysis and interpretation of geodetic data
      - Encourage students and young scientists to become involved



# Standards, Conventions, & Formats

- Recommendations

- Inconsistency of tide systems

- IAG resolve inconsistency concerning treatment of permanent tide

- Inconsistency of numerical standards

- Clearly document the numerical standards used for all geodetic products
    - Develop a new Geodetic Reference System (GRS20XX)
      - Based on best estimates of ellipsoidal parameters

- Simplifying IERS Conventions

- Encourage contributors to follow guiding principles for simplifying Conventions

- Nutation models

- Update amplitudes of leading terms of IAU2000
    - Test shortened series for certain operational purposes
    - Correct existing inconsistencies in precession-nutation models
    - Test available FCN models
      - Consider whether IERS should recommend an FCN model
    - Prioritize tasks of IAU/IAG JWG on Improving Earth Rotation Theories and Models
      - In order to obtain results in two years

- High-frequency EOP models

- Adopt Desai & Sibois / Egbert TPX08 model

# Reference Systems and Frames

- Recommendations

- IGS

- Urge IGS to preserve alignment of its products to ITRF2014 until ITRF2020 is published

- IVS

- Urge IVS to provide atmospheric loading corrections to right-hand side of normal equations in SINEX files

- ILRS

- Urge ILRS to provide range bias estimates with covariance in weekly SINEX files

- IDS

- Encourage IDS to mitigate DORIS-specific systematic errors that impact frame parameters (origin, scale)

- GGFC

- Invite GGFC to provide a unified loading model that includes all contributions (atmosphere, hydrology, and ocean) for all ITRF2020 sites

# Site Survey and Co-location

- Recommendations

- IERS Working Group

- Continue IERS Working Group on Site Survey and Co-location
  - Set objectives
  - Clarify reporting expectations
  - Engage IAG Services in activities of the Working Group
  - Hold annual meetings
  - Disseminate knowledge of antenna deformation measurements
  - Issue guidelines
  - Liaise with the tide gauge community
  - Distribute publications related to the activities of the Working Group

- Deflection of vertical

- Understand deflection-of-vertical contribution to local tie measurements

- Prioritize site surveys

- Survey sites that have never been done before re-surveying those that have